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(54) **A finger toothbrush**

Fingerzahnbürste

Brosse à dents en forme de doigtier

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## Description

[0001] The invention relates to a finger toothbrush having a brush body which exhibits a finger-supporting side and a generally loop-like holding element for joining the finger toothbrush to a finger, wherein the brush body bears bristles on an outer surface facing away from the finger-supporting side.

[0002] A finger toothbrush of this character is already known from US 1896941 by way of example. The disposable finger toothbrush in that reference comprises a thimble-like element. One face of the element is of cheesecloth and is used to engage the teeth of the user. The toothbrush has no bristles. The toothbrush is designed to be used once and then disposed. It is made from sheets of materials joined together. It comprises a compartment for the storage until use of toothpaste.

[0003] A further finger toothbrush bearing bristles in a portion of a tubular brush body is known from US 5 636 405. Such a finger toothbrush can be manufactured in one piece, for example in an injection mould with two mould halves. However, before injecting the mould part for forming the interior cavity of the tube, it is necessary that a core be introduced into the mould cavity formed by the mould halves and be withdrawn again after injection. This is likewise complex and costly with regard to the injection mould and manufacture.

[0004] The object underlying the present invention is to provide a finger toothbrush of the kind set forth at the outset, which can be manufactured quickly and to especial cost advantage in a particularly simple way.

[0005] The present invention provides a finger toothbrush according to claim 1, having a brush body which exhibits a finger-supporting side for engaging one side of a finger of a user and at least one loop-like holding element which extends from the finger supporting side of the brush body to at least substantially encircle the finger of the user for joining the finger toothbrush to the finger, wherein:

the brush body bears bristles on an outer surface facing away from the finger-supporting side;  
the brush body has an aperture extending there-through from the surface of the finger supporting side which in use faces the finger of the user to the outer surface which faces away from the finger-supporting side;  
the aperture is defined in part by a pair of opposed boundary edges of the aperture which extend lengthwise along the finger toothbrush; and  
at least one of said boundary edges also forms an end edge of a holding element.

[0006] The aperture enables simple, one-piece manufacture of the finger toothbrush in an injection mould which may take the form of a multi-cavity mould for the simultaneous injection moulding of a plurality of finger toothbrushes, e.g. 24. Assembly of several components

is not necessary. As a consequence, a high number of pieces of finger toothbrushes per unit of time can be manufactured, enabling cheap mass production.

[0007] A further advantage consists in that the aperture facilitates curvature of the brush body during cleaning for adaption to the dental structure. The flexibility of the finger toothbrush is thereby increased and cleaning efficiency can be enhanced.

[0008] The finger toothbrush of the invention can comprise a plurality of generally loop-like holding elements and a brush body which has a plurality of apertures extending therethrough from the surface of the finger supporting side which in use faces the finger of the user to the outer surface which faces away from the finger-supporting side, each aperture being defined in part by a respective pair of opposed boundary edges of the aperture which extend lengthwise along the finger toothbrush, each pair of opposed boundary edges also forming end edges of one of the plurality of holding elements.

[0009] It is advantageous if the width of each aperture along the finger toothbrush and the width of the holding element associated to said aperture are approximately equal. The portion recessed in the brush body for an aperture forms the loop-like holding element projecting at the finger-supporting side and spanning the aperture, which simplifies the manufacture of the finger toothbrush. The width of a loop-like holding element can be about 3mm to 10mm, preferably about 4mm. Good retention of the finger toothbrush on a finger is hence given and the holding element exhibits sufficient stability.

[0010] It is particularly suitable if the finger toothbrush consists of elastic material, particularly rubber or rubber-like plastic, polyethylene, polypropylene or similar plastic material usable in an injection moulding process. The brush body of the finger toothbrush is thereby elastic to an extent such that, during cleaning, it can be adapted particularly well to the dental structure by bending the finger. The bristles are hence likewise elastic, so that they do not cause any injury during cleaning, but on the other hand they exhibit sufficient stability for good cleaning efficiency. By means of the likewise elastic holding elements, good adaptation to different finger widths can be attained and, as a result of the elasticity, the holding elements rest snugly against the finger so as to prevent the finger toothbrush from becoming inadvertently detached from the finger. In addition, it is possible to provide slanting bristles. By virtue of their elasticity, such bristles can be ejected from the injection mould despite their slanting arrangement, as they can undergo elastic deformation accordingly during ejection.

[0011] An advantageous embodiment contemplates that at least one of the holding elements is an arcuate, closed configuration arm. Particularly good and secure retention of the finger toothbrush on the finger is thus constituted.

[0012] Another embodiment contemplates that at least one of the holding elements has two arcuate holding arms whose free ends face each other and which

can be spread apart against a restoring force. This renders it especially practicable to adapt the finger toothbrush to different finger widths. There is hence the possibility of producing finger toothbrushes in a single size, which can then be used in like manner by people with different finger widths. This simplifies manufacture significantly.

**[0013]** A particularly suitable embodiment contemplates that the surface of the finger-supporting side of the brush body which faces the finger of the user is dished, e.g. concave. The finger-supporting side is thus generally adapted in shape to the contour of a finger. The finger supporting side of the brush body in a region of an end receiving a tip of the finger is formed approximately up to or over the finger tip. With such an anatomical shape, the brush body can be held with especial convenience and ease, so that the handling of the finger toothbrush, or more specifically the cleaning of teeth, is simplified. Preferably each aperture in the brush body continues into a laterally arched edge area of the brush body. The laterally arched edge area provides additional lateral guidance for the finger, so that it rests particularly snugly against the brush body and the finger toothbrush is prevented from inadvertently slipping or sliding off. To prevent injury in the oral cavity, particularly by the finger nail of the finger holding the finger toothbrush at least in the region of the end receiving the finger tip, the dished brush body is formed approximately up to or over the finger tip. By this means the finger nail is peripherally enclosed by, and does not project beyond, the brush body. The finger nail, or more specifically its outer edge, is hence practically embedded in the dished brush body.

**[0014]** It is preferred that each aperture of the brush body continues into the laterally arched edge area so that the dished brush body can be bent more simply at the apertures in order that, during cleaning, the finger toothbrush be adapted to the dental structure by bending the finger.

**[0015]** The brush body preferably has a thickness in the range of 0.5mm to 3 mm. The wall thickness of the brush body is preferably 1.0mm.

**[0016]** It is advantageous if the bristles have a length in the range 3mm to 5mm. Preferably the bristles are 4mm long. In one embodiment bristles of different length are provided. The bristles are short enough to allow that the finger toothbrush, together with the finger holding it, be easily inserted into the oral cavity. On the other hand, the bristles are of a length sufficient to be able to give way elastically during cleaning, enhancing cleaning efficiency and preventing injury in the oral cavity. The cleaning action, particularly in the interdental spaces, can be further enhanced by bristles of different length, that is to say, by a contoured array of bristles.

**[0017]** Preferably at least some of the bristles each have a substantially round cross-section and a diameter in the range 0.05mm to 0.5mm. Preferably the bristles each have a diameter of 0.2mm. In one embodiment at least some of the bristles have a bristle tip with a portion

of conical configuration, each conical portion tapering towards a free end thereof. Preferably the bristle tips have free ends which are rounded.

**[0018]** According to one embodiment, bristles can be provided whose cleaning ends are divided into a plurality of bristles tips. Fine, narrow bristles tips are thereby obtained, enabling through cleaning of the teeth and particularly of the dental interspaces.

**[0019]** It may be suitable if a peripheral rib generally bounding the array of bristles is provided and is of a height which is preferably about 0.5mm to about 1mm. If tooth powder is used, this is normally sprinkled onto the moistened finger toothbrush. The peripheral rib prevents the tooth powder from dropping off the finger toothbrush. The height of the peripheral rib is selected in such a way as, on the one hand, to keep the tooth powder on the finger toothbrush and, on the other, not to hamper cleaning.

**[0020]** In addition, it may be suitable if the brush body is provided with a pair of holding elements, a first holding element closest in use to the end of the finger of the user and a second holding element spaced apart from the first holding element by a distance which locates the second holding element at least further from the end of the finger of the user than the second finger joint. A plurality of holding elements produces improved retention of the finger toothbrush on the finger. Given two holding elements spaced as mentioned, the finger toothbrush can be designed in such a way the holding elements, and hence also the apertures, are in each case arranged in the region of a finger joint. By this means, the finger toothbrush can be adapted especially simply to the dental structure by bending the finger, so that in particular the molars can also be thoroughly cleaned.

**[0021]** Preferred embodiments of the finger toothbrush according to the present invention will now be described by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a longitudinal side view of a finger toothbrush according to a first embodiment of the present invention, having a dished brush body and two loop-like holding elements;

Fig. 2 is the finger toothbrush of Figure 1 viewed from the end at which the finger is inserted, with holding elements closed in a holding element which comprises an arcuate closed configuration arm;

Fig. 3 is a finger toothbrush according to a second embodiment of the present invention viewed from the end at which the finger is inserted, with holding elements each having two arcuate holding arms;

Fig. 4 is the finger toothbrush of Figure 1 in which the end thereof receiving the finger tip is formed approximately up to the finger tip;

Fig. 5 is the finger toothbrush of Figure 4 viewed frontally from the end receiving the finger tip;

Figs. 6 to 8 illustrate various embodiments of bristles of a finger toothbrush according to the present invention; and

Fig. 9 is a schematic representation of an array of bristles of a finger toothbrush according to the present invention.

[0022] A finger toothbrush, altogether designated 1a, 1b, 1c, 1d, 1e in the respective Figures, has a brush body 2 and, projecting on the finger-supporting side of the brush body 2, two generally loop-like holding elements 3 for joining the finger toothbrush 1a, 1b, 1c, 1d, 1e to a finger 14 indicated by a dashed line in Figure 1. On the outer surface facing away from the finger-supporting side, the brush body 2 bears bristles 4 indicated in schematic form. Such finger toothbrushes 1a, 1b, 1c, 1d, 1e can be slipped onto a finger 14 and employed for cleaning teeth directly with the finger 14.

[0023] Figure 1 shows a finger toothbrush 1a whose brush body 2 has two apertures 5 therethrough. A loop-like holding element 3 engages with the opposed boundary edges 6 of each aperture 5 which extend along the finger toothbrush 1a.

[0024] In order that the finger toothbrush 1a can be manufactured in one piece and in an injection mould with only two plates, without further cores, in each case one aperture 5 and one holding element 3 are mutually opposed. During the injection moulding of the finger toothbrush 1a, one formation of a first mould cavity half engages with a respective recess of a second mould cavity half to form a holding element, whereby the formation is spaced at least in some regions from the recess. In the base area of the formation an aperture for this formation is produced during the injection moulding of the finger toothbrush, so that the injection mould can be opened again without any difficulty. When the injection mould is opened, simple ejection is possible because the finger toothbrush has no undercut areas. Separate cores and drawing devices are not necessary. The manufacture of the finger toothbrush is thus possible in a particularly simple, rapid and cost-advantageous fashion.

[0025] The apertures 5 furthermore enable simplified curvature of the brush body 2 when cleaning the teeth, since the apertures 5 also compose predetermined bending points.

[0026] It is also to be seen in Figure 1 that, on the one hand, the width b1 of an aperture 5 along the finger toothbrush 1a, and, on the other hand, the width b2 of the holding element 3 associated to said aperture, are approximately equal. On the basis of the above-described manufacture of the finger toothbrush 1a in an injection mould with two plates and a formation engaging with a recess to compose a holding element, the

width b2 of a holding element 3 can be maximally as large as the width b1 of an aperture 5. Consequently, the holding elements 3 have the greatest possible width b2, permitting especially good retention of the finger toothbrush 1a on the finger. In addition, the holding element 3 are large and thereby sufficiently stable so as not to be damaged when inserting the finger or when cleaning teeth, increasing the service life of the finger toothbrush 1a.

[0027] The finger toothbrush 1a, 1b, 1c, 1d, 1e depicted in the Figures consists of elastic material, particularly rubber or rubber-like plastic, polyethylene, polypropylene or the like, which also lends itself well to use in an injection moulding process. Through the inherent elasticity of the material, the finger toothbrush 1a, 1b, 1c, 1d, 1e can easily be curved by the finger 14 holding them, so as to be able to adapt them to the dental structure and gain ready access to all oral areas. Cleaning efficiency can thereby be enhanced. In addition, the bristles 4 are also elastically yielding, preventing injury in the oral cavity during cleaning.

[0028] Figure 2 shows a finger toothbrush 1b viewed from the end at which the finger 14 is inserted. The holding element 3 to be seen in Figure 2 is an arm of arcuate, closed configuration. By this means, the finger toothbrush 1b is retained on a finger 14 especially well. Since the finger toothbrush 1b consists of elastic material, the holding element 3 can be stretched and thus adapt itself to different finger widths.

[0029] Figure 3 shows a different exemplary embodiment of a finger toothbrush 1c in which the depicted holding element 3 has two arcuate holding arms 7. The free ends of the holding arms 7 face each other. Since the finger toothbrush 1c consists of elastic material, the holding arms 7 can be spread apart against a restoring force. The holding element 3 can therefore adapt especially well and within broad limits to different finger sizes.

[0030] By this means it is not necessary to manufacture finger toothbrushes 1a, 1b, 1c, 1d, 1e of different size. If necessary, larger finger toothbrushes 1a, 1b, 1c, 1d, 1e with a larger brush body 2 can be provided for adults and smaller ones with a smaller brush body 2 can be provided for children. These can then be used by anyone in the respective group of persons, regardless of the individual finger size.

[0031] According to Figures 1 to 5 the brush body 2 is dish-shaped and its finger supporting side is generally adapted in shape to the contour of a finger. By this means, the finger 14 is held to the finger toothbrush 1a, 1b, 1c, 1d, 1e especially well, preventing inadvertent detachment of the finger toothbrush 1a, 1b, 1c, 1d, 1e from the finger 14 during cleaning.

[0032] According to Figures 4 and 5, in the region of the end receiving the finger tip, the dish-shaped brush body 2 is formed approximately up to the finger tip. Figure 4 shows a side view of the end of a finger toothbrush 1d receiving the finger tip and Figure 5 shows a front view of a correspondingly configured finger toothbrush 1e.

With these finger toothbrushes 1d, 1e, the finger nail does not project beyond the free edge 8 of the brush body 2, but is embedded in the brush body 2. Hence injuries in the oral cavity by the finger nail when cleaning teeth are prevented. The apertures 5 of the brush body 2 in each case continue into the laterally arched edge area (Figs. 1, 4). Simple curvature or bending of the brush body 2 in the region of the apertures 5 is thereby possible with little expenditure of force also with finger toothbrushes 1a, 1d having dished brush bodies 2.

[0033] The wall thickness d of the brush body 2 (Figure 2) is proportioned in such a way that the finger toothbrush 1a, 1b, 1c, 1d, 1e on the one hand exhibits sufficient stability to prevent damage of the brush body 2 in use, and on the other hand can be readily curved. In addition, the wall thickness d is selected in such a way as to obtain a short cooling time during injection moulding of the finger toothbrush 1a, 1b, 1c, 1d, 1e and thus higher manufacturing output of finger toothbrushes 1a, 1b, 1c, 1d, 1e per unit of time. The wall thickness of the brush body 2 is preferably about 0.5mm to 3mm, particularly about 1mm.

[0034] Figures 6 to 8 show bristles 4a, 4b, 4c varying in configuration. Figure 6 depicts two separate bristles 4a each tapering at one side toward its free end, thus enhancing the cleansing action of the bristles 4a. In addition, the free ends of the bristles 4a are rounded to prevent injury in the oral cavity when cleaning teeth.

[0035] Figure 7 shows a bristle 4b whose cleaning end is divided into a plurality of bristle tips 9. The bristle tips 9 are so narrow as to enable thorough cleaning of the teeth and particularly of the interdental spaces. The free extremities of the bristle ends 9 are also rounded to prevent injury.

[0036] Figure 8 shows a bristle 4c where the bristle tips 9 differ in length. The entire array of bristles 4c of a finger toothbrush 1a, 1b, 1c, 1d, 1e can thus be contoured to enhance the cleansing action. Furthermore, the bristle tips 9 are re-divided into fine end portions 11. An especially fine surface, with which the teeth can be cleaned especially thoroughly, is thus achieved.

[0037] Figure 9 shows a plan view looking onto the bristle side of a brush body 2, showing the apertures 5 from whose bordering edges 6 the holding elements 3 extend. Also indicated are several sections 12 of the array of bristles 4, each with one or more bristles (not shown). By suitably distributing the bristles 4 on the brush body 2, a contour can be provided, for instance with long bristles 4 in the outer area, with which especially good cleansing action can be achieved.

[0038] In Figure 2 a peripheral rib 13 is provided which extends along the longitudinal sides of the bristle body 2 and bounds the array of bristles 4. The peripheral rib 13 prevents tooth powder sprinkled onto the bristles 4 from dropping off before the finger toothbrush 1b is introduced into the oral cavity. If necessary, the peripheral rib 13 could also be continued at the cross side of the brush body 2, so as to produce a peripheral rib 13 ex-

tending around the brush body 2.

[0039] According to Figures 1, 4 and 5, slanting bristles 4 are provided in the area of the front and longitudinal sides of the finger toothbrush 1a, 1d, 1e. Teeth can thereby be cleaned in a simpler and more thorough fashion.

[0040] Since the bristles 4 consist of elastic material, the slanting bristles 4 can also be detached from the mould without any difficulty after the finger toothbrush 1a, 1d, 1e has been injection moulded.

[0041] The finger toothbrushes 1a, 1b, 1c, 1d, 1e can be made in different sizes, e.g. larger ones for adults and smaller ones for children. Furthermore, finger toothbrushes 1a, 1b, 1c, 1d, 1e can be made with bristles 4 of different hardness. The finger toothbrushes 1a, 1b, 1c, 1d, 1e can be fashioned in different colours to distinguish ones of different size and/or bristle hardness. In addition, it is conceivable to provide the brush body 2 with a number or similar marking for this purpose, for instance a projection or a depression.

#### Claims

1. A finger toothbrush (1a, 1b, 1c, 1d, 1e) having a brush body (2) which exhibits a finger-supporting side for engaging one side of a finger (14) of a user and at least one loop-like holding element (3) which extends from the finger-supporting side of the brush body to at least substantially encircle the finger of the user for joining the finger toothbrush to the finger, wherein:

the brush body bears bristles (4, 4a, 4b, 4c) on an outer surface facing away from the finger-supporting side;

characterised in that the brush body has an aperture (5) extending therethrough from the surface of the finger-supporting side which in use faces the finger of the user to the outer surface which faces away from the finger-supporting side; the aperture is defined in part by a pair of opposed boundary edges (6) of the aperture which extend lengthwise along the finger toothbrush; and at least one of said boundary edges also forms an end edge of a holding element (3).

2. A finger toothbrush as claimed in claim 1 which comprises a plurality of generally loop-like holding elements (3) and wherein:

the brush body comprises a plurality of apertures (5) extending therethrough from the surface of the finger-supporting side which in use faces the finger of the user to the outer surface which faces away from the finger-supporting

- side,  
each aperture is defined in part by a respective pair of opposed boundary edges (6) of the aperture which extend lengthwise along the finger toothbrush;  
each pair of opposed boundary edges also form end edges of one of the plurality of holding elements (3).
3. A finger toothbrush as claimed in claim 1 or claim 2, **characterised in that** the width (b1) of each aperture along the finger toothbrush and the width (b2) of the holding element associated with the aperture are approximately equal.
  4. A finger toothbrush as claimed in any one of claims 1 to 3, **characterised in that** the finger toothbrush consists of an elastic material.
  5. A finger toothbrush as claimed in claim 4 **characterised in that** the finger toothbrush consists of a rubber material.
  6. A finger toothbrush as claimed in claim 4 **characterised in that** the finger toothbrush consists of a rubber-like material.
  7. A finger toothbrush as claimed in claim 4 **characterised in that** the finger toothbrush consists of polyethylene.
  8. A finger toothbrush as claimed in claim 4 **characterised in that** the finger toothbrush consists of polypropylene.
  9. A finger toothbrush as claimed in claim 4 **characterised in that** the finger toothbrush consists of a material which can be used in an injection moulding process.
  10. A finger toothbrush as claimed in any one of claims 1 to 9 **characterised in that** at least one of the holding elements comprises an arcuate, closed configuration arm.
  11. A finger toothbrush as claimed in any one of claims 1 to 9 **characterised in that** at least one of the holding elements has two arcuate holding arms (7) whose free ends face each other.
  12. A finger toothbrush as claimed in claim 11, wherein the two arcuate holding arms are adapted to be spread apart against a restoring force.
  13. A finger toothbrush as claimed in any one of claims 1 to 12 **characterised in that** the surface of the finger-supporting side of the brush body which faces the finger of the user is dishd.
  14. A finger toothbrush as claimed in claim 13, wherein the finger-supporting side of the brush body in a region of an end receiving a tip of the finger is formed approximately up to or over the finger tip.
  15. A finger toothbrush as claimed in any one of claims 1 to 14 **characterised in that** each aperture in the brush body continues into a laterally arched edge area of the brush body.
  16. A finger toothbrush as claimed in any one of claims 1 to 15 **characterised in that** the brush body has a wall thickness in the range of 0.5mm to 3mm.
  17. A finger toothbrush as claimed in claim 16, wherein the wall thickness of the brush body is 1.0mm.
  18. A finger toothbrush as claimed in any one of claims 1 to 17 **characterised in that** the bristles have a length in the range 3mm to 5mm.
  19. A finger toothbrush as claimed in claim 18 which has bristles of different lengths.
  20. A finger toothbrush as claimed in claim 18, wherein the bristles are 4mm long.
  21. A finger toothbrush as claimed in any one of claims 1 to 20 **characterised in that** at least some of the bristles each have a substantially round cross-section and a diameter in the range of 0.05mm to 0.5mm.
  22. A finger toothbrush as claimed in claim 20, wherein the bristles each have a diameter of 0.2mm.
  23. A finger toothbrush as claimed in any one of claims 1 to 21, **characterised in that** at least some of the bristles have a bristle tip (9) with a portion of conical configuration, each conical portion tapering toward a free end of the bristle tip.
  24. A finger toothbrush as claimed in claim 23, wherein the bristle tips have free ends which are rounded.
  25. A finger toothbrush as claimed in any one of claims 1 to 24 **characterised in that** bristles are provided which are each divided into a plurality of bristle tips.
  26. A finger toothbrush as claimed in any one of claims 1 to 25, which has a peripheral rib (13) generally bounding the array of bristles, the peripheral rib having a height which is in the range 0.5mm to 1mm.
  27. A finger toothbrush as claimed in any one of claims 1 to 26 **characterised in that** the brush body is provided with a pair of holding elements, a first holding

element closest in use to the end of the finger of the user and a second holding element spaced apart from the first holding element by a distance which locates the second holding element at least further from the end of the finger of the user than the second finger joint.

#### Patentansprüche

1. Fingerzahnbürste (1a;1b;1c;1d;1e) mit einem Bürstenkörper (2), der eine Finger-haltende Seite zum Eingreifen einer Seite eines Fingers (14) eines Benutzers und wenigstens ein schleifenartiges Halteelement (3) aufweist, das sich von der Finger-haltenden Seite des Bürstenkörpers erstreckt, um wenigstens im Wesentlichen den Finger des Benutzers zu umschließen, um die Fingerzahnbürste mit dem Finger zu verbinden, wobei:

der Bürstenkörper Borsten (4; 4a; 4b;4c) an einer äußeren, von der Finger-haltenden Seite abgewandten Oberfläche trägt;

**dadurch gekennzeichnet, dass** der Bürstenkörper eine Öffnung (5) aufweist, die sich von der Oberfläche der Finger-haltenden Seite, die bei Gebrauch dem Finger des Benutzers zugewandt ist, zu der äußeren Oberfläche, die von der Finger-haltenden Seite abgewandt ist, hindurch erstreckt; wobei die Öffnung zum Teil durch ein Paar einander entgegengesetzter Grenzkanten (6) der Öffnung definiert ist, die sich der Länge nach entlang der Fingerzahnbürste erstrecken; und wobei wenigstens eine der Grenzkanten auch eine Endkante des Halteelements bildet.

2. Fingerzahnbürste nach Anspruch 1, die mehrere im Allgemeinen schleifenartige Halteelemente (3) umfasst und wobei:

der Bürstenkörper mehrere Öffnungen (5) umfasst, die sich von der Oberfläche der Finger-haltenden Seite, die bei Gebrauch dem Finger des Benutzers zugewandt ist, zu der äußeren Oberfläche, die von der Finger-haltenden Seite abgewandt ist, hindurcherstreckt, wobei jede Öffnung zum Teil durch ein jeweiliges Paar von entgegengesetzten Grenzkanten (6) der Öffnung definiert wird, die sich der Länge nach entlang der Fingerzahnbürste erstrecken; wobei jedes Paar entgegengesetzter Grenzkanten auch Endkanten eines von den mehreren Halteelementen (3) bildet.

3. Fingerzahnbürste nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Breite (b1) jeder Öffnung entlang der Fingerzahnbürste und die Brei-

te (b2) des Halteelements, das mit der Öffnung verbunden ist, ungefähr gleich ist.

4. Fingerzahnbürste nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Fingerzahnbürste aus einem elastischen Material besteht.
5. Fingerzahnbürste nach Anspruch 4, **dadurch gekennzeichnet, dass** die Fingerzahnbürste aus einem Gummi-Material besteht.
6. Fingerzahnbürste nach Anspruch 4, **dadurch gekennzeichnet, dass** die Fingerzahnbürste aus einem gummiartigen Material besteht.
7. Fingerzahnbürste nach Anspruch 4, **dadurch gekennzeichnet, dass** die Fingerzahnbürste aus Polyäthylen besteht.
8. Fingerzahnbürste nach Anspruch 4, **dadurch gekennzeichnet, dass** die Fingerzahnbürste aus Polypropylen besteht.
9. Fingerzahnbürste nach Anspruch 4, **dadurch gekennzeichnet, dass** die Fingerzahnbürste aus einem Material besteht, das bei einem Spritzgussprozess verwendet werden kann.
10. Fingerzahnbürste nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** wenigstens eines der Halteelemente einen gebogenen, geschlossenen Konfigurationsarm umfasst.
11. Fingerzahnbürste nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** wenigstens eines der Halteelemente zwei gebogene Haltearme (7) aufweist, deren freie Enden einander zugewandt sind.
12. Fingerzahnbürste nach Anspruch 11, wobei die beiden gebogenen Haltearme dazu ausgelegt sind, gegen eine Reaktionskraft gespannt zu werden.
13. Fingerzahnbürste nach einem der Ansprüche 1 bis 12, **dadurch gekennzeichnet, dass** die Oberfläche der Finger-haltenden Seite des Bürstenkörpers, die dem Finger des Benutzers zugewandt ist, abgewaschen wird.
14. Fingerzahnbürste nach Anspruch 13, **dadurch gekennzeichnet, dass** die Finger-haltende Seite des Bürstenkörpers in einem Bereich eines Endes einer Spitze des Fingers aufnehmenden Endes ungefähr bis zu der oder über die Fingerspitze ausgebildet ist.
15. Fingerzahnbürste nach einem der Ansprüche 1 bis 14, **dadurch gekennzeichnet, dass** sich jede Öffnung in dem Bürstenkörper sich in ein lateral gebo-

genes Kantengebiet des Bürstenkörpers fortsetzt.

16. Fingerzahnbürste nach einem der Ansprüche 1 bis 15, **dadurch gekennzeichnet, dass** der Bürstenkörper eine Wandstärke in dem Bereich von 0,5 mm bis 3 mm aufweist. 5
17. Fingerzahnbürste nach Anspruch 16, wobei die Wandstärke des Bürstenkörpers 1,0 mm ist. 10
18. Fingerzahnbürste nach einem der Ansprüche 1 bis 17, **dadurch gekennzeichnet, dass** die Borsten eine Länge in dem Bereich von 3 mm bis 5 mm aufweist. 15
19. Fingerzahnbürste nach Anspruch 18, die Borsten unterschiedliche Länge aufweisen.
20. Fingerzahnbürste nach Anspruch 18, wobei die Borsten 4 mm lang sind. 20
21. Fingerzahnbürste nach einem der Ansprüche 1 bis 20, **dadurch gekennzeichnet, dass** wenigstens einige der Borsten jeweils einen runden Querschnitt und einen Durchmesser in dem Bereich von 0,05 mm bis 0,5 mm aufweisen. 25
22. Fingerzahnbürste nach Anspruch 20, wobei die Borsten einen Durchmesser von 0,2 mm aufweisen. 30
23. Fingerzahnbürste nach einem der Ansprüche 1 bis 21, **dadurch gekennzeichnet, dass** wenigstens einige der Borsten eine Borstenspitze (9) mit einem Abschnitt konischer Konfiguration aufweisen, wobei jeder konische Abschnitt sich in Richtung eines freien Endes der Borstenspitze verjüngt. 35
24. Fingerzahnbürste nach Anspruch 23, wobei die Borstenspitzen freie Enden aufweisen, die abgerundet sind. 40
25. Fingerzahnbürste nach einem der Ansprüche 1 bis 24, **dadurch gekennzeichnet, dass** Borsten vorgesehen sind, die in mehrere Borstenspitzen aufgeteilt sind, 45
26. Fingerzahnbürste nach einem der Ansprüche 1 bis 25, die eine periphere Rippe (13) aufweist, die im Allgemeinen das Borstenfeld begrenzt, wobei die periphere Rippe eine Höhe aufweist, die in dem Bereich von 0,5 bis 1 mm liegt. 50
27. Fingerzahnbürste nach einem der Ansprüche 1 bis 26, **dadurch gekennzeichnet, dass** der Bürstenkörper mit einem Paar Halteelemente versehen ist, wobei ein erstes Halteelement bei Gebrauch dem Finger des Benutzers am nächsten liegt und ein zweites Halteelement von dem ersten Halteelement

um eine Distanz entfernt ist, durch die das zweite Halteelement mindestens weiter von dem Ende des Fingers des Benutzers entfernt angeordnet wird als die zweite Fingerverbindung.

#### Revendications

1. Brosse à dents à utilisation au doigt (1a, 1b, 1c, 1d, 1e) comportant un corps de brosse (2) qui présente une face de support de doigt pour engager une face d'un doigt (14) d'un utilisateur et au moins un élément de fixation en forme d'anneau (3) qui s'étend depuis la face de support de doigt du corps de brosse pour au moins substantiellement encercler le doigt de l'utilisateur afin de relier au doigt la brosse à dents à utilisation au doigt, dans laquelle :

le corps de brosse porte des poils (4, 4a, 4b, 4c) sur une surface externe donnant loin de la face de support de doigt ;

caractérisée en ce que le corps de brosse comporte une ouverture (5) s'étendant en son sein de la surface de la face de support de doigt qui, à l'utilisation, donne sur le doigt de l'utilisateur jusqu'à la surface externe qui donne loin de la face de support de doigt ;

l'ouverture est définie en partie par une paire de bords limites opposés (6) de l'ouverture qui s'étendent dans le sens de la longueur de la brosse à dents à utilisation au doigt ; et au moins l'un desdits bords limites forme également un bord d'extrémité d'un élément de fixation (3).

2. Brosse à dents à utilisation au doigt selon la revendication 1, qui comprend une pluralité d'éléments de fixation généralement en forme d'anneaux (3) et dans laquelle :

le corps de brosse comprend une pluralité d'ouvertures s'étendant en son sein de la surface de la face de support de doigt qui, à l'utilisation, donne sur le doigt de l'utilisateur jusqu'à la surface externe qui donne loin de la face de support de doigt,

chaque ouverture est définie en partie par une paire respective de bords limites opposés (6) de l'ouverture qui s'étendent dans le sens de la longueur de la brosse à dents à utilisation au doigt ;

chaque paire de bords limites opposés forme également des bords d'extrémité d'un des éléments de fixation (3) de la pluralité.

3. Brosse à dents à utilisation au doigt selon la reven-



- dication 1 ou la revendication 2, **caractérisée en ce que** la largeur (b1) de chaque ouverture le long de la brosse à dents à utilisation au doigt et la largeur (b2) de l'élément de fixation associé à l'ouverture sont à peu près égales.
4. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** la brosse à dents à utilisation au doigt consiste en un matériau élastique.
  5. Brosse à dents à utilisation au doigt selon la revendication 4, **caractérisée en ce que** la brosse à dents à utilisation au doigt consiste en un matériau de caoutchouc.
  6. Brosse à dents à utilisation au doigt selon la revendication 4, **caractérisée en ce que** la brosse à dents à utilisation au doigt consiste en un matériau semblable au caoutchouc.
  7. Brosse à dents à utilisation au doigt selon la revendication 4, **caractérisée en ce que** la brosse à dents à utilisation au doigt consiste en polyéthylène.
  8. Brosse à dents à utilisation au doigt selon la revendication 4, **caractérisée en ce que** la brosse à dents à utilisation au doigt consiste en polypropylène.
  9. Brosse à dents à utilisation au doigt selon la revendication 4, **caractérisée en ce que** la brosse à dents à utilisation au doigt consiste en un matériau qui peut être employé dans une opération de moulage par injection.
  10. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 9, **caractérisée en ce qu'au moins** un des éléments de fixation comprend un bras arqué, de configuration fermée.
  11. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 9, **caractérisée en ce qu'au moins** un des éléments de fixation comporte deux bras de fixation arqués (7) dont les extrémités libres se font face.
  12. Brosse à dents à utilisation au doigt selon la revendication 11, dans laquelle les deux bras de fixation arqués sont adaptés à être écartés à l'encontre d'une force de rappel.
  13. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 12, **caractérisée en ce que** la surface de la face de support de doigt du corps de brosse qui donne sur le doigt de l'utilisateur est en cuvette.
  14. Brosse à dents à utilisation au doigt selon la revendication 13, dans laquelle la face de support de doigt du corps de brosse dans une région d'une extrémité recevant un bout du doigt est formée à peu près jusqu'au bout du doigt ou recouvre le bout du doigt.
  15. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 14, **caractérisée en ce que** chaque ouverture dans le corps de brosse continue dans une zone de bord arqué latéralement du corps de brosse.
  16. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 15, **caractérisée en ce que** le corps de brosse a une épaisseur de paroi dans la plage de 0,5 mm à 3 mm.
  17. Brosse à dents à utilisation au doigt selon la revendication 16, dans laquelle l'épaisseur de paroi du corps de brosse est de 1 mm.
  18. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 17, **caractérisée en ce que** les poils ont une longueur dans la plage de 3 mm à 5 mm.
  19. Brosse à dents à utilisation au doigt selon la revendication 18, qui comporte des poils de différentes longueurs.
  20. Brosse à dents à utilisation au doigt selon la revendication 18, dans laquelle les poils ont une longueur de 4 mm.
  21. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 20, **caractérisée en ce qu'au moins** certains des poils ont chacun une section transversale sensiblement ronde et un diamètre dans la plage de 0,05 mm à 0,5 mm.
  22. Brosse à dents à utilisation au doigt selon la revendication 20, dans laquelle les poils ont chacun un diamètre de 0,2 mm.
  23. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 21, **caractérisée en ce qu'au moins** certains des poils ont une extrémité de poil (9) avec une portion de configuration conique, chaque portion conique allant en se rétrécissant vers une extrémité libre de l'extrémité de poil.
  24. Brosse à dents à utilisation au doigt selon la revendication 23, dans laquelle les extrémités des poils comportent des extrémités libres qui sont arrondies.

25. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 24, caractérisée en ce que des poils sont prévus qui sont divisés chacun en une pluralité d'extrémités de poils.

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26. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 25, qui comporte une bordure périphérique (13) délimitant généralement l'ensemble de poils, la bordure périphérique ayant une hauteur qui est dans la plage de 0,5 mm à 1 mm.

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27. Brosse à dents à utilisation au doigt selon l'une quelconque des revendications 1 à 26, caractérisée en ce que le corps de brosse est doté d'une paire d'éléments de fixation, un premier élément de fixation le plus près à l'utilisation du bout du doigt de l'utilisateur et un deuxième élément de fixation espacé du premier élément de fixation d'une distance qui place le deuxième élément de fixation au moins plus loin du bout du doigt de l'utilisateur que la deuxième articulation du doigt.

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